**Лабораторная работа №1**

Код:

using System;

namespace Test

{

class MainClass

{

public static void Main (string[] args)

{

OutputOptions (); //1st

TriangleArea (); //2nd

CircleLength (); //3rd

SumOfAngles (); //4th

TrigonomQuantities (); //5th

Amount(); //6th

Area7th (); //7th

QadraticEquat(); //8th

TriangleExistNoIF(); //9th

Parity(); //10th

HelloAndBye(); //11th

Example1(); //12th

Example2(); //13th

Example3 (); //14th

Example4 (); //15th 9var

Example5 (); //16th 9var

Console.ReadKey();

}

public static void OutputOptions()

{

Console.WriteLine ("1st exercise");

char endl = '\n';

Console.WriteLine("Гринь\nАлександр\n");

Console.WriteLine(@"Гринь

Александр

");

Console.WriteLine("Гринь");

Console.WriteLine ("Александр\n");

Console.WriteLine ("Гринь{0}Александр{0}\n", endl);

Console.ReadKey ();

}

public static void TriangleArea()

{

Console.WriteLine ("2nd exercise");

Console.WriteLine ("Площадь треугольника с катетами 5 и 7 равна " + (5\*7\*0.5) + "\n");

Console.ReadKey ();

}

public static void CircleLength()

{

Console.WriteLine ("3rd exercise");

int r = Convert.ToInt32 (Console.ReadLine ());

Console.WriteLine("Длина окружности с заданным радиусом равна {0}\n", (r \* Math.PI \* 2) );

Console.ReadKey ();

}

public static void SumOfAngles()

{

Console.WriteLine ("4th exercise");

Console.Write("Количество углов: ");

int n = Convert.ToInt32(Console.ReadLine());

Console.WriteLine("Sum of angles is = {0}\n", (180 \*(n-2)) );

Console.ReadKey ();

}

public static void TrigonomQuantities()

{

Console.WriteLine ("5th exercise");

double a = Convert.ToDouble (Console.ReadLine ());

double b = Convert.ToDouble(Console.ReadLine ());

double c = Convert.ToDouble (Console.ReadLine ());

Console.WriteLine ("Sinus is {0}", (a/c));

Console.WriteLine ("Cosine is {0}", (b/c));

Console.WriteLine ("Tanget is {0}", (a/b));

Console.WriteLine ("Cotangent is {0} \n", (b/a));

Console.ReadKey ();

}

public static void Amount()

{

Console.WriteLine ("6th exercise");

Console.WriteLine ("Введите длины сторон параллелепипеда:");

int a = Convert.ToInt32 (Console.ReadLine ());

int b = Convert.ToInt32 (Console.ReadLine ());

int c = Convert.ToInt32 (Console.ReadLine ());

Console.WriteLine ("Объём половины заданного параллелепипеда " + ((a\*b\*c) - (a\*b\*(c/2)))+ "\n");

Console.ReadKey ();

}

public static void Area7th()

{

Console.WriteLine ("7th exercise");

int x = Convert.ToInt32 (Console.ReadLine ());

int y = Convert.ToInt32 (Console.ReadLine ());

Console.WriteLine ("Радиусы: ");

int r1 = Convert.ToInt32 (Console.ReadLine ());

int r2 = Convert.ToInt32 (Console.ReadLine ());

while ((r1 >= Math.Min (x, y)) || (r2 >= Math.Min (x, y)))

{

Console.WriteLine ("Введите корректные значение!");

r1 = Convert.ToInt32 (Console.ReadLine ());

r2 = Convert.ToInt32 (Console.ReadLine ());

}

double result = (x \* y) - (Math.PI \* Math.Pow (r1, 2)) - (Math.PI \* Math.Pow (r2, 2));

Console.WriteLine ("Ответ 7го задания при заданных значениях: " + result);

Console.ReadKey ();

}

public static void QadraticEquat()

{

Console.WriteLine ("\n8th exercise");

Console.WriteLine ("Введите значения:");

double a = Convert.ToInt32 (Console.ReadLine ());

double b = Convert.ToInt32 (Console.ReadLine ());

double c = Convert.ToInt32 (Console.ReadLine ());

double d = Math.Pow (b, 2) - 4 \* a \* c;

if (d > 0)

{

double x1 = (-b + Math.Sqrt (d)) /( 2 \* a);

double x2 = (-b - Math.Sqrt (d)) /( 2 \* a);

Console.WriteLine ("1й корень уравнения:" + x1);

Console.WriteLine ("2й корень уравнения:" + x2);

}

else if (d == 0)

{

double x = (-b) /( 2 \* a);

Console.WriteLine ("Корень уравнения:"+ x);

}

else

{

Console.WriteLine ("Отрицательный дискриминант!");

}

Console.ReadKey ();

}

public static void TriangleExistNoIF()

{

Console.WriteLine ("\n9th exercise");

Console.WriteLine ("Введите значения сторон треугольника:");

int a = Convert.ToInt32 (Console.ReadLine ());

int b = Convert.ToInt32 (Console.ReadLine ());

int c = Convert.ToInt32 (Console.ReadLine ());

int p = (a + b + c) / 2;

double area = Math.Sqrt(p \* (p -a) \* (p -b ) \* (p -c));

bool isExist = ((a + b > c) && (a + c > b) && (b + c > a)) ? true : false;

switch (isExist) {

case true:

{

Console.WriteLine ("Площадь такого треугольника " + area);

break;

}

case false:

{

Console.WriteLine ("Такой треугольник не существует!");

break;

}

}

Console.ReadKey ();

}

public static void Parity()

{

Console.WriteLine ("\n10th exercise");

int a = Convert.ToInt32 (Console.ReadLine ());

bool isParity = (a % 2 == 0) ? true : false;

switch (isParity) {

case true:

{

Console.WriteLine ("Число чётное");

break;

}

case false:

{

Console.WriteLine ("Число нечётное");

break;

}

}

Console.ReadKey ();

}

public static void HelloAndBye()

{

Console.WriteLine ("\n11th exercise");

Console.WriteLine ("Имя пользователя " + Environment.MachineName);

Console.WriteLine ("Введите своё имя!");

string name = Console.ReadLine ();

if (Environment.MachineName == name)

Console.WriteLine ("HELLO!");

else

Console.WriteLine ("Bye");

Console.ReadKey ();

}

public static void Example1()

{

Console.WriteLine ("\n12th exercise");

double t = Convert.ToDouble (Console.ReadLine ());

double result = (2 \* (Math.Sqrt(1 + 0.25 \* Math.Pow((Math.Sqrt(1/t) - Math.Sqrt(t)), 2)))) / (Math.Sqrt(1 + 0.25 \* Math.Pow(Math.Sqrt(1/t) - Math.Sqrt(t), 2) - (0.5 \*(Math.Sqrt(1/t) - Math.Sqrt(t)))));

Console.WriteLine ("Ответ: " + result);

Console.ReadKey ();

}

public static void Example2()

{

Console.WriteLine ("\n13th exercise");

double a = Convert.ToDouble (Console.ReadLine ());

while (a == 1)

{

Console.WriteLine ("Знаменатель равен нулю!");

a = Convert.ToDouble (Console.ReadLine ());

}

double first = 1 / (Math.Sqrt (a) + Math.Sqrt (a + 1));

double second = 1 / (Math.Sqrt (a) - Math.Sqrt (a - 1));

double third = 1 + (Math.Sqrt ((a + 1) / (a - 1)));

Console.WriteLine ("Ответ: " + ((first + second) / third) );

Console.ReadKey ();

}

public static void Example3()

{

Console.WriteLine ("\n14th exercise");

double x = Convert.ToDouble (Console.ReadLine ());

double result = (2 \* (Math.Pow (x, 4) + (4 \* Math.Pow (x, 2) - 12)) + Math.Pow (x, 4) + (11 \* Math.Pow (x, 2)) + 30) / (Math.Pow (x, 2) + 6);

Console.WriteLine ("Ответ: " + result);

Console.ReadKey ();

}

public static void Example4()

{

Console.WriteLine ("\n15th exercise and 9th variant");

double x = Convert.ToDouble (Console.ReadLine ());

double y = Convert.ToDouble (Console.ReadLine ());

double result\_1 = Math.Pow (Math.Cos (x), 4) + Math.Pow (Math.Sin (y), 2) + (0.25 \* Math.Pow (Math.Sin (2 \* x), 2)) - 1;

double result\_2 = Math.Sin (x + y) \* Math.Sin (y - x);

Console.WriteLine ("Ответы:\n{0}\n{1}",result\_1,result\_2);

Console.ReadKey ();

}

public static void Example5()

{

Console.WriteLine ("\n16th exercise and 9th variant");

double x = 182.5;

double y = 18.225;

double z = (-3.298) \* 0.01;

double fi = 1.2131;

double result\_fi1 = Math.Abs (Math.Pow (x, 0.5) - Math.Pow ((y / x), (1/3)));

double result\_fi2 = (y - x) \* ((Math.Cos (y) - ((z) / (y - x))) / (1 + Math.Pow ((y - x), 2)));

Console.WriteLine("Fi по умолчанию равно " + fi);

Console.WriteLine("Fi после расчётов " + (result\_fi1 + result\_fi2));

}

}

}

Скриншоты:







